

BERGEY XL-15 INSTALLATION QUICK GUIDE



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RECOMMENDED TOOL LIST

Please note the below list is to serve as a general reference of what tools you should have available. However in no way is it meant to be a comprehensive list of tools required to complete the installation.

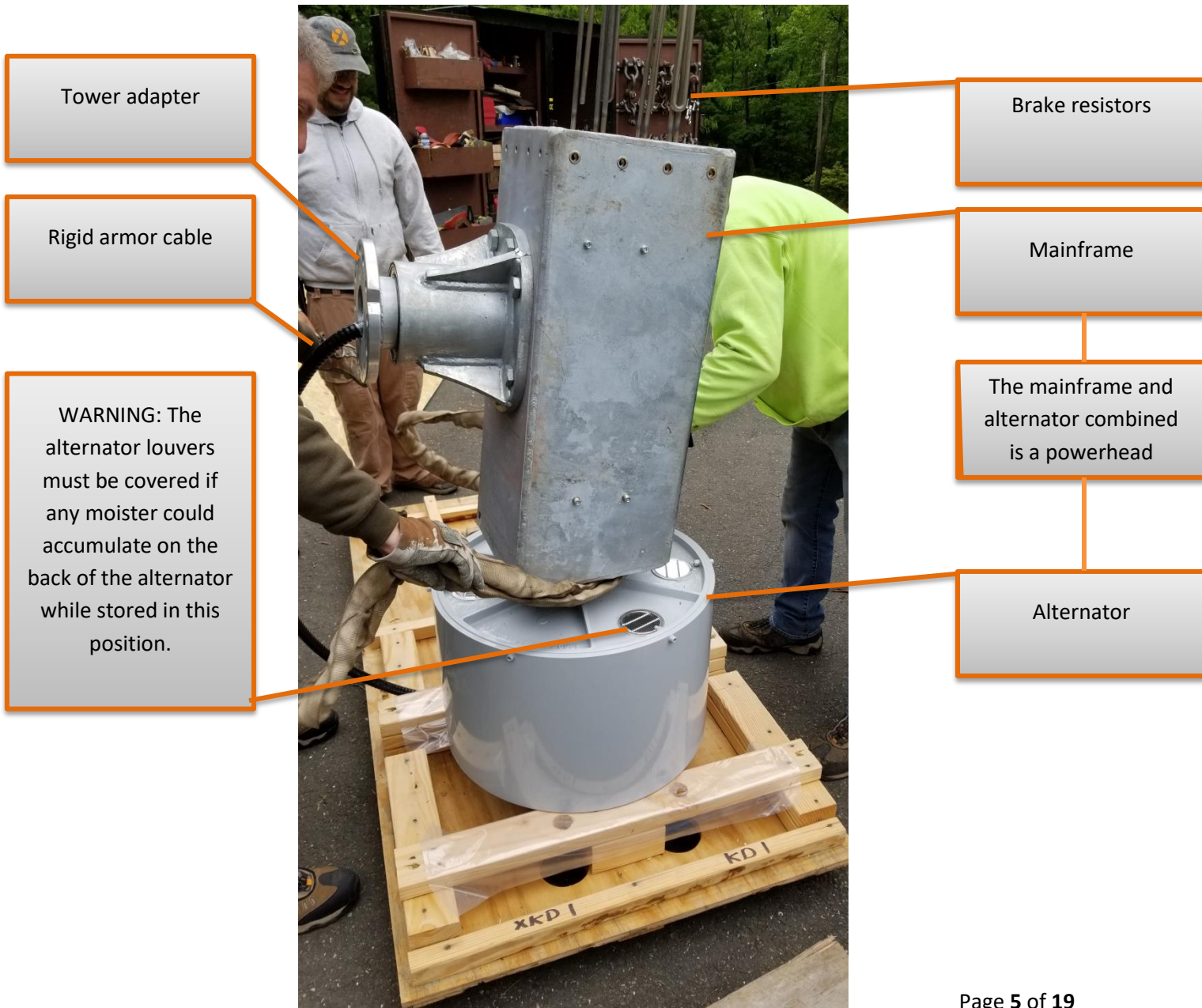
- Torque wrench -150LBS
- 1-1/16 deep socket
- 17 MM socket and wrench
- 24 MM socket
- 22 MM socket
- 5/32 or 4MM allen key
- Screw drivers
- Wire strippers
- Wire crimpers
- Diagonal cutters
- Razor blade knife
- Drill bits
- Volt meter/megger
- Spud wrench
- Tag line
- Chain hoist

TORQUE VALUES

TASK	TOOL	HARDWARE	TORQUE
Attach tailboom to mainframe	17 MM	10 MM	35 ft·lb
Attach tailfin to tailboom	17 MM	10 MM	35 ft·lb
Torque bracket to alternator	22 MM	14 MM	100 ft·lb
Blades/clamp plate to alternator	24 MM	16 MM	*SEE PG
Spinner mounting	17 MM	10 MM	20 ft·lb
Turbine to tower	1-1/16"	5/8 (UNC)	120 ft·lb (?)
Inverter grid side connections		5/32 or 4mm allen key	90 inch lbs
Inverter Turbine side connections		#2 flathead screwdriver	40 inch lbs
Dumplload +/- connections	3/16" or 5MM		90 inch lbs
Dumplload fan connections	Wire crimpers	Butt splice	

GETTING STARTED

The unit will come in three packages. Below is the power head crate that has been open and stripped down to begin turbine assembly. Note the alternator is bolted to the pallet.



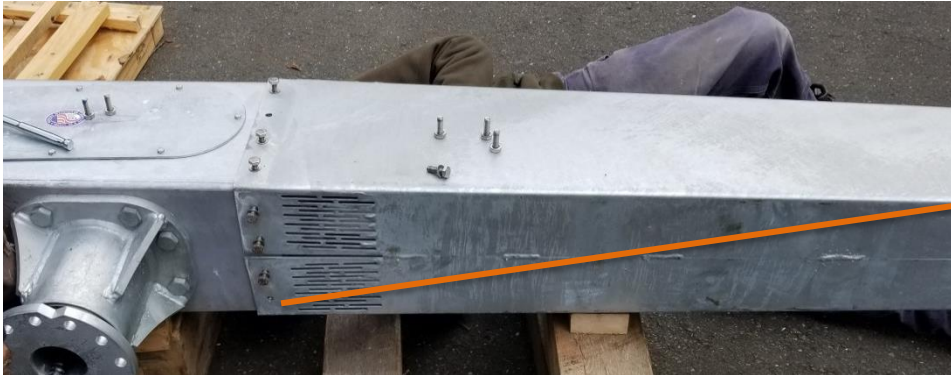
POSITIONING THE UNIT FOR TAIL ASSEMBLY

A mechanical advantage will be required to lower the powerhead on its side as it weights over 1,000 lbs. Careful attention must be given to the armored cable and brake resistors to ensure this is not crushed in the process. Damage to the armored cable could result in a non-operational turbine.



TAIL INSTALLATION

The tail can be installed 180° out or upside down, take caution to ensure this is not done. Leave all bolts finger tight until all bolts are started. Ensure extreme caution is taken to avoid damaging the brake resistors protruding from the rear of the mainframe when joining mainframe and tail together.



WARNING: The tailboom bolts must be installed with hand tools. Using an impact driver WILL damage the nuts.



Tailboom incorrectly installed upside down

TAIL INSTALLATION CONTINUED

A quick check to ensure you are installing the tailboom correctly: While looking down the turbine, from the alternator to the tailboom the tail fin should be located on the right side of the machine.



Tailboom installed correctly

TAIL FIN INSTALLTION

Shown below are images of how it will look after proper installation.



RIGGING THE TURBINE FOR THE PICK

The turbine has two eye bolts atop the mainframe. Ideally a strap is attached to each eye bolts. It has been reported when picked in this manner the tower adapter does not “sit” parallel with the tower top. A chain hoist can provide a fine adjustment.

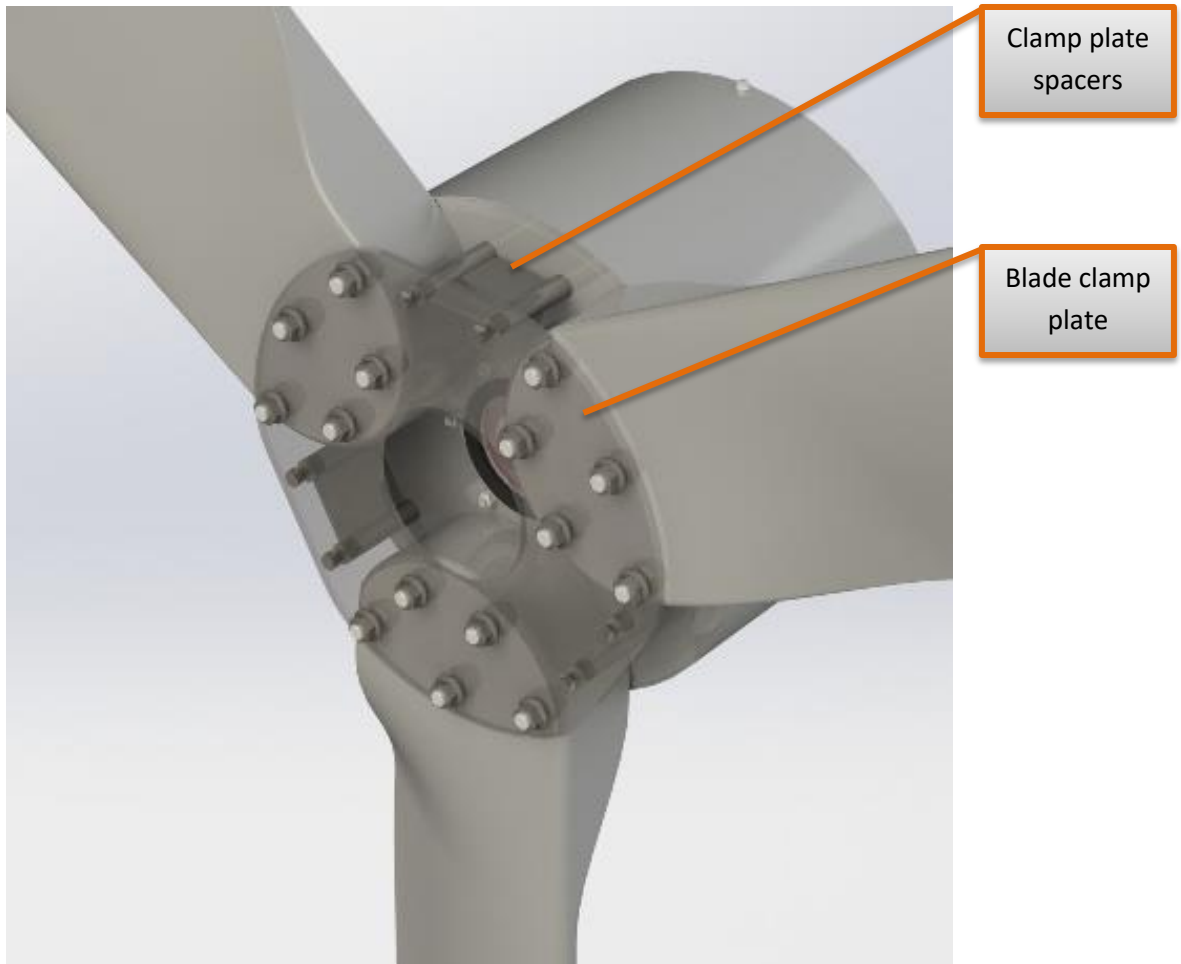
Blades should not be installed yet. However, take note of blade orientation, with one blade straight up

Lift Weight: ~1,350 LBS



Tag line to control turbine swing

BLADE INSTALLATION



BLADE CLAMP PLATE SPACERS

Install the blade clamp plate and the clamp plate spacers. Notice the bolt goes through the clamp plate then through the plate spacers into the alternator. Leave all hardware loose.



NOTE: The clamp plate spacers are from a previous revision. Current production will have hardware to mount the nose cone already installed

BLADE ORIENTATION

The blades can bolt onto the alternator backwards. It is important to ensure this does not happen. Although the blades come with stickers that indicate how to install the blades, close scrutiny should be applied to ensure they are correct. When facing the alternator looking towards the tailboom the blades should rotate counterclockwise. The leading edge (thick) portion should turn into the wind.



FITTING BLADES

Now that the blade clamp plate and clamp plate spacers are installed, loosely. We can install the first blade. Fit the blade between the alternator and clamp plate as documented below.



Two blades can be installed before the turbine is lifted. While the turbine is being lifted they can be rotated around for the easiest installation of the third blade.

BLADE TORQUE

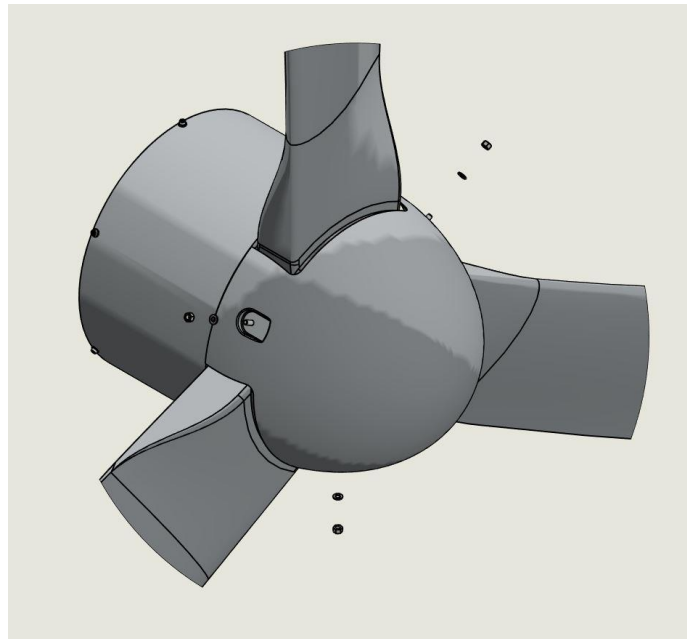
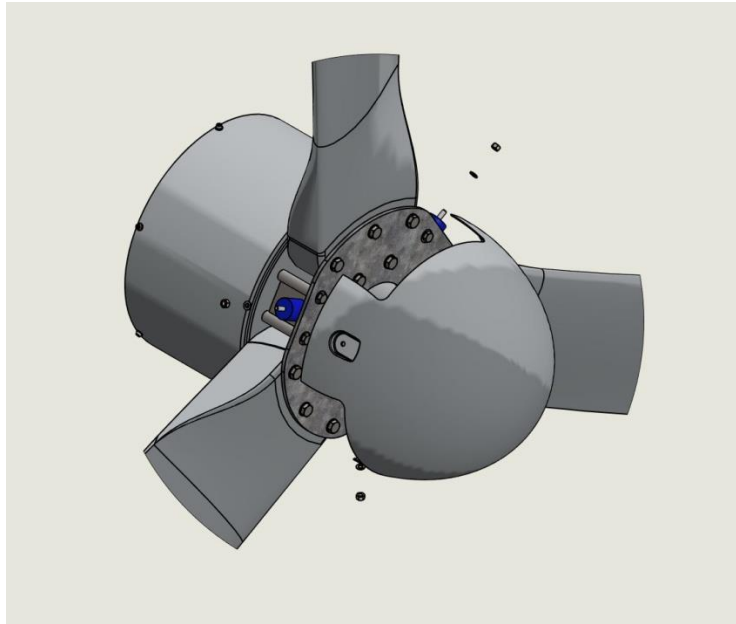
Again while lifting the turbine the armored cable must receive attention that it is not crushed at any point in the process. The blades have a procedure for being torqued. Start with 50 ft·lb. then back off a $\frac{1}{4}$ turn, 75 ft·lb. then back off a $\frac{1}{4}$ turn, 100 ft·lb. then back off a $\frac{1}{4}$ turn, 125 ft·lb. then back off a $\frac{1}{4}$ turn and final torque at 150 ft·lb.



At this time the tag line should be installed to assist in raising the turbine.

NOSE CONE INSTALLATION

The nose cone will line up with the rubber mounts factory installed on the clamp plate spacers. One bolt and washer are used per mount to install the nose cone.



APPLYING A PHASE TO PHASE SHORT

At this time a phase to phase short should be applied in the down tower disconnect box. Use two 10 gauge solid strand wires to jump between the bottoms of the fuses as shown below. This short should be left in place until the system is commissioned.



RAISING THE TURBINE

The top blade should be tied off to the lifting eye bolt to physically stop the alternator rotation. Once the electrical connections are made the phase to phase short applied in the discount will electrically stop the alternator rotation and the blade should be untied.



ADDITIONAL INFORMATION

- Ensure a junction box is scored to install the down tower cable with the armored cable that is protruding from the 15KW tower adapter. This will also require a source for connecting the wires, Polaris tabs are ideal
- The inverter fans are controlled by a thermostat, the dump load fans run continually
- Upon initial commissioning ensure the Emergency stop is pulled out
- Use a 125 amp breaker for the grid side connection. If the panel cannot support this size of breaker consult a local electrician to see if a line side tap is an option.